

**ABSTRACT**

An optical network for the transfer of data between optical network units (ONU) connected to respective data terminal  
5 equipment including electro-optical interface for converting electrical signals to optical signals for transmission through the optical network and for converting optical signals to electrical signals for input to the terminal equipment, comprises a fiber optic line having first and second ends; first  
10 and second point-of-presence (POP) units connected to respective first and second ends of the fiber optic line, the first and second POP units for being connected to another optical network, the first and second POP units including optical multiple wavelength apparatus for optical signal generation and optical  
15 multiple wavelength apparatus for optical signal detection; first and second optical communicators connected to the fiber optic line at locations between the first and second POP units; first and second ONUs operably connected to respective the first and second optical communicators, the first and second ONUs  
20 being associated with respective first and second data terminal equipment; the first optical communicator being configured to transmit a first wavelength signal bi-directionally from the first ONU to both the first and second POP units, the first optical communicator including a first add/drop module operably  
25 connected to the fiber optic line to drop a second wavelength signal from the fiber optic line intended for the first ONU; the

second optical communicator being configured to transmit a third wavelength signal bi-directionally from the second ONU to both the first and second POP units, the second optical communicator including a second add/drop module operably connected to the  
5 fiber optic line to drop a fourth wavelength signal from the fiber optic line intended for the second ONU; the first and second ONUs each including optical multiple wavelength apparatus for optical generation and optical wavelength apparatus for optical detection; and control system means for allocating  
10 wavelengths between the first and second ONUs and the first and second POP units.